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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,308	10/22/2003	Frank Schmidt	979-037	8584

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SOFER& HAROUN, LLP
Suite 910
317 Madison Avenue
New York, NY 10017

EXAMINER

COOKE, COLLEEN P

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,308

Applicant(s)

SCHMIDT, FRANK

Examiner

Colleen P. Cooke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Objections

Claim 13 is objected to because of the following informalities: The claim appears to inadvertently contain a typographical error in line 4 which recites “super conducting” instead of “superconducting”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4-7, 9, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Norton et al. (6,849,580).

Norton et al. teaches a superconducting cable (see Figures 2 and 3) including a hollow carrying element (344), wound with at least one layer having 2 or more superconducting elements (346 or 352), wherein the superconducting elements can be YBCO tapes (Column 2, lines 64-67; see also Figure 1) having a biaxially textured superconducting layer on a substrate which can be amorphous (Column 5, lines 52-55; Column 6, lines 18-22) and therefore have no lattice matching. The cable further has an insulating layer (350) between the two superconducting layers (346 and 352).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujikami et al. (EP 0650205 A1) in view of Beach et al. (6440211).

Fujikami et al. teaches a superconducting cable (see Figures 5-7) including a carrying element (core or former 55) which is cylindrical or spiral, is preferably hollow, may be metal and therefore electrically conductive, and also may have a spiral groove (page 5, lines 20-33). Fujikami et al. teaches that the core can also be solid, and may have an insulating layer on it prior to any superconducting layers (page 6, lines 14-16). Fujikami et al. teaches that the core has is wound with superconducting tapes (51) in at least two or more layers (61, 62), each layer formed by an arbitrary number of tapes and with insulating layers (50, 60, 62, 65) between each layer (page 5, lines 34-41). Fujikami et al. further teaches that the tapes may use YBCO, (Bi,Pb)SCCO, or TSCCO superconducting material (page 4, lines 45-47). Fujikami et al. teaches that the superconductors are multi-filament wires in a silver matrix of the powder-in-tube type (page 4, lines 49-55) and therefore does not teach that the superconductors are coated conductors.

Beach et al. teaches that coated conductors (i.e. a substrate, optional intervening buffer layers and a top superconducting layer) can be used for power transmission lines (Column 1,

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lines 26-37) and that these coated conductors can have as a top layer a biaxial YBCO layer (Column 10, lines 5-51).

It would have been obvious to modify the superconducting cable of Fujikami et al. by using coated conductors such as the type taught by Beach et al. because Beach et al. teaches that the coated conductors can be used in such superconducting cables (Column 1, lines 26-37).

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujikami et al. (EP 0650205 A1) in view of Alford et al. ("High-temperature superconducting thick films").

Fujikami et al. teaches a superconducting cable (see Figures 5-7) including a carrying element (core or former 55) which is cylindrical or spiral, is preferably hollow, may be metal and therefore electrically conductive, and also may have a spiral groove (page 5, lines 20-33). Fujikami et al. teaches that the core can also be solid, and may have an insulating layer on it prior to any superconducting layers (page 6, lines 14-16). Fujikami et al. teaches that the core has is wound with superconducting tapes (51) in at least two or more layers (61, 62), each layer formed by an arbitrary number of tapes and with insulating layers (50, 60, 62, 65) between each layer (page 5, lines 34-41). Fujikami et al. further teaches that the tapes may use YBCO, (Bi,Pb)SCCO, or TSCCO superconducting material (page 4, lines 45-47). Fujikami et al. teaches that the superconductors are multi-filament wires in a silver matrix of the powder-in-tube (PIT) type (page 4, lines 49-55) and therefore does not teach that the superconductors are coated conductors.

Alford et al. teaches that coated conductors have been developed as an alternative to PIT type conductors and show excellent properties by comparison (page 170, first paragraph). Alford

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et al. further teaches that these coated conductors can be made of rare earth barium copper oxides including YBCO (page 170, second paragraph) and that various substrates may be used including those wherein the undermost substrate would not have lattice matching for texturing, which can be achieved through the use of later buffer layers or various process techniques (see sections 2.2-2.3 on substrate materials; see also section 3.5).

It would have been obvious to modify the superconducting cable of Fujikami et al. by using coated conductors such as the type taught by Alford et al. because Alford et al. teaches that the coated conductors were developed as an alternative to PIT type conductors, as an improvement showing excellent properties (page 170, first paragraph). It would be obvious to substitute the coated conductors for the PIT conductors because, as Alford et al. teaches, the progression of the superconducting art has led from PIT to coated conductors.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Norton et al. (6,849,580), in view of Park et al. (6,812,191).

Norton et al. teaches the superconducting cable as described with respect to claim 1 above including that the superconducting material may be YBCO. Norton et al., however, does not teach the limitations of claim 3 wherein the rare earth barium cuprate contains one of the elements listed.

Park et al. teaches that it is desirable for YBCO to additionally contain Zn (see abstract and Columns 2-3, lines 66-7).

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It would have been obvious to modify the YBCO of Norton et al. to also contain Zn because Park et al. teaches it improves the performance of the YBCO and additionally that Zn-containing YBCO may be used in superconducting cable specifically (Column 1, lines 52-54).

Response to Arguments

Applicant's arguments filed 1/13/06 have been fully considered but they are not persuasive.

It is first generally noted that the applicant's response contains frequent references to and put great stress on issues such as bending stresses, bending resistance, diameters of current carrying elements, thickness (or thinness) or cable conductors, forces caused by bending, elongation or tension stress, and superconducting properties. However, it is noted that there are no claim limitations drawn to any of this. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding the rejection made over Norton et al. (6849580), the applicant argues that Norton does not meet the claim limitation of "a carrying element, onto which is wound at least one layer comprising two or more superconducting elements, the individual elements of each layer being arranged next to one another" but instead teaches two distinct layers of coated

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conductor. It appears that the applicant wishes the claim language to be restricted to winding at least two tape-type coated conductors side by side into the carrying element in a single layer (as explained on page 9 of the response) yet the current claim language is not limited to this configuration. Norton et al. teaches a carrying element onto which is wound two layers which each comprise a superconducting element (i.e. is therefore at least one layer and comprising two or more superconducting elements); further, the recitation of that the elements are "next to" one another would encompass the arrangement of Norton et al. where the two layers are next to one another with intervening layers (i.e. in cross-section). It appears the arguments are not in line with the scope of the claims and therefore are not persuasive.

Regarding the rejection over Fujikami et al. (EP 0650205) in view of Beach et al. (6440211), the applicant argues several characteristics or properties which are not claimed (i.e. forces caused by bending, elongation or tension stress, bending resistance particular bending stresses, diameter of superconducting cables, superconducting properties over long lengths or wire), as described above, which is not persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, it is noted that Fujikami et al. is in fact concerned with bending strain and limits such to less than 0.3%, including specific examples at 0.1% and having good superconducting properties.

The applicant next argues the specific teachings of each reference in the 103 rejection separately. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant further argues the motivation in behind the combination of references, referring specifically to the “problem” of decreasing diameter of superconducting cables that can withstand high bending stresses. It is first noted that none of these features are claimed. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is second noted that this statement appears to have no bearing on the cited art, rejection made, or even the specific motivation applied in the rejection. Fujikami et al. teaches a superconducting cable structure and Beach et al. teaches that a specific type of superconductor, a coated conductor, can be used in superconducting cables.

Regarding the rejection over Fujikami et al. (EP 0650205) in view of Alford et al. (“High-temperature superconducting thick films”), the applicant argues several characteristics or properties which are not claimed (i.e. forces caused by bending, elongation or tension stress, bending resistance particular bending stresses, diameter of superconducting cables, superconducting properties over long lengths or wire), as described above, which is not

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persuasive. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Furthermore, it is noted that Fujikami et al. is in fact concerned with bending strain and limits such to less than 0.3%, including specific examples at 0.1% and having good superconducting properties.

The applicant next argues, with respect to the teachings of Alford et al., that films with sufficient superconducting properties are restricted to specimens of only about 40 mm in length, which is insufficient for cable conductors, and further that Alford et al. discloses that the suitability of YBCO thick films is limited such that BSCCO is the material of preference for thick film wires or tape conductors. These arguments are not persuasive for at least the following reasons. First, regarding the 40mm length, Alford et al. merely teaches that 40 mm specimens showed excellent properties (section 3.5 on page 181, lines 1-8). There is no suggestion or implication that the properties are limited to only this length nor is any significance really even attributed to this length. It is merely the length of the sample tested and measured with the results shown in Figure 13. Second, regarding limited suitability of YBCO cited by the applicant as taught on page 183, Alford et al. at no point makes any mention of any limited suitability of YBCO or any of the other superconducting materials discussed thereon; the basis for the applicant's argument cannot be found. Though Alford et al. does indicate that "BSCCO was seen to be the material of preference at present for dip-coated thick-film wire or tape conductors where at 4.2K it outperforms conventional superconductors at high magnetic fields" it is noted

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that this is firstly only a preference and second a very specific circumstance; Alford et al. does not teach that YBCO is unsuitable for cable conductors. Also, this section of Alford et al. again refers to the properties of the 40 mm YBCO samples but still in no way limits the uses or properties of the YBCO material to 40 mm only. Lastly, it is noted that there are no claim limitations drawn to length of any sort. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., length) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

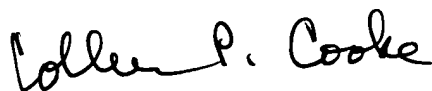
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen P. Cooke whose telephone number is 571-272-1170. She can normally be reached Mon.-Fri. 9:00 am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Stan Silverman can be reached at 571-272-1358. The official fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Colleen P Cooke
Primary Examiner
Art Unit 1754